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EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,300

Applicant(s)

REINHOLD, ALFRED

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-80 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 41-80 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Microfocus X-ray Apparatus with Current Stream Regulation.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the target electrically insulated relative to a main body (claim 42), regulation of a target stream being adapted to be activated and deactivated (claims 51 and 69), a further regulating device provided for regulating an emission stream of an x-ray tube when regulation of a target stream is deactivated (claims 52 and 70), a target stream that momentarily flows when regulation of said target stream is activated forming a desired value of said target stream (claims 53 and 71), an emission stream that momentarily flows when regulation of the target stream is deactivated forming a desired value for regulation of said emission stream by a further regulation device (claims 54 and 72), the regulating device regulating a target stream in such a way that an exceeding of a prescribed or prescribeable maximum electrical output of the target is prevented (claims 55 and 73), activation of regulation of a target stream after activation of an x-ray tube effected in a chronologically delayed manner (claims 56 and 74), activation of regulation of a target stream effected when an emission stream

of an x-ray tube achieves a prescribed or prescribeable desired value (claims 57 and 75), deactivation of regulation of a target stream being effected until a new desired value of high voltage is achieved, upon an alteration of a desired value of said high voltage (claims 58 and 76), regulating parameters of a regulating device being alterable as a function of high voltage (claims 59 and 77), regulating parameters being altered, upon a reduction of high voltage, in such a way that lag time of regulation of a target stream is increased, and regulating parameters being altered, upon an increase of said high voltage, in such a way that the lag time of the regulation is reduced (claims 60 and 78), means via which an emission stream of an x-ray tube can be deflected or blocked in such a way that a striking of an emission stream upon a target is essentially prevented (claim 61), deactivation of regulation of a target stream being effected upon activation of means for deflecting or blocking an emission stream (claims 62 and 79), and means for determining whether a short circuit is present at a target, and wherein upon determination of a short circuit, the determining means deactivate regulation of said target stream (claims 63 and 80) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 41, 59, and 62-64 are objected to because of the following informalities, which appear to be minor draft errors including lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 41, line 4, "the intensity"; deleting "the"), (claim 59, line 2, "said high"; deleting "said"), (claim 62, line 3, "said means"; replacing "said" with - the-), (claim 63, line 3, "said determining means"; replacing "said" with - the-), and (claim 64, line 1, "the intensity"; deleting "the").

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

4. The claims are objected to because they include following reference characters which are not enclosed within parentheses: (claim 42, line 2, "target 6"), (claim 75, line 2, "emission stream 14 of said x-ray tube 4"), (claim 76, line 2, "high voltage generator 12"), (claim 77, line

3, "generator 12"), (claim 79, line 2, "emission stream 14 of said x-ray tube 4"), (claim 79, line 3, target 6"), and (claim 80, line 2, "target 6").

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 41-80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claims 41 and 64, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim,

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and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 41 and 64 recites the broad recitation "at least one parameter of said target stream", and the claim also recites "in particular a current strength of said target stream" which is the narrower statement of the range/limitation. Claims 42-63 and 65-80 are rejected for the above reasons by virtue of their dependency.

7. Regarding claims 46 and 67, the phrase "preferably" in line 2 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 58 and 68 are also rejected for the above reasons by virtue of their dependency.

8. Regarding claim 61, the phrase "can be" in line 3 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 62 is also rejected for the above reasons by virtue of its dependency.

9. Claim 70 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: wherein an emission stream of said x-ray tube is regulated with a further regulating device when regulation of said target stream is deactivated.

The omitted step is considered essential, since regulation of an emission stream cannot occur when regulation is deactivated without a further regulating device. In other words, regulation that is deactivated cannot continue to regulate an emission stream by itself.

The claims have been examined as best understood by the Examiner as follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 41-48, 51-59, 61, 62, 64-77, and 79 are rejected under 35 U.S.C. 102(e) as being anticipated by Oettinger et al. (US Patent Application Publication 2005/0018817).

11. Regarding claims 41 and 64, Oettinger et al. discloses an apparatus and method comprising an x-ray tube (fig. 3b, #120) that is provided with a target (paragraph 90, anode), means for bombarding (paragraph 90, filament) the target with a target stream (paragraph 90, electrons), and means for regulating intensity of x-ray radiation that is produced, wherein said means for regulating includes means for regulating at least one parameter of said target stream, in particular a current strength of said target stream (paragraph 90, beam current feedback signal voltage 204 (BC_FDBK)).

12. Regarding claim 42, Oettinger et al. further discloses wherein said target is disposed on a main body of said x-ray tube (fig. 1a, #120) such that it is electrically insulated relative to said main body (paragraphs 12 and 17).

13. Regarding claims 43 and 65, Oettinger et al. further discloses wherein a current sensor is provided for detecting an actual value of a current strength of said target stream (fig. 3b, #204-208).

14. Regarding claim 44, Oettinger et al. further discloses wherein said means for regulating at least one parameter of said target stream includes a regulating device (fig. 3b, #204-208).

15. Regarding claims 46 and 67, Oettinger et al. further discloses wherein a high voltage generator (fig. 3b, #102) is provided for producing a preferably essentially constant high constant voltage (paragraph 99) by means of which electrons for generating an emission stream of said x-ray tube are accelerated in a direction toward said target (paragraph 90).

16. Regarding claims 45, 47, 66, and 68, Oettinger et al. further discloses wherein said regulating device compares a detected actual value (fig. 5a, #204) of said target stream with a prescribed desired value (fig. 5a, #200) of said target stream and alters a control value in such a way that any difference between said desired value and said actual value is minimized (fig. 5a, #212), and wherein said control value is an emission stream of said x-ray tube (fig. 3b, #222 to 120).

17. Regarding claim 48, Oettinger et al. further discloses wherein said regulating device is provided with an electrical or electronic control circuit that forms a controller (fig. 3b).

18. Regarding claims 51 and 69, the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform (fig. 3b, #232). It does not constitute a limitation in any patentable sense.

19. Regarding claims 52, 54, 70, and 72, Oettinger et al. would necessarily have a further regulating device provided for regulating an emission stream of an x-ray tube when regulation of said target stream is deactivated, wherein an emission stream that momentarily flows when regulation of a target stream is deactivated forms a desired value for regulation of the emission stream by said further regulating device (fig. 3b, when the device is off).

20. Regarding claim 53, the functional recitations of “wherein a target stream that momentarily flows when regulation of said target stream is activated forms a desired value of said target stream” has not been given patentable weight because it is directed to the operation of the apparatus and does not structurally distinguish the apparatus over the prior art. See MPEP 2114.

21. Regarding claim 55-57, the functional recitations of regulating “said target stream in such a way that an exceeding of a prescribed or prescribeable maximum electrical output of said target

is prevented”, “wherein after an activation of said x-ray tube an activation of regulation of said target stream is effected in a chronologically delayed manner”, and “wherein activation of regulation of said target stream is effected when an emission stream of said x-ray tube achieves a prescribed or prescribeable desired value” has not been given patentable weight because it is directed to the operation of the apparatus and does not structurally distinguish the apparatus over the prior art.

22. Regarding claim 58, the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. Furthermore, the functional recitations of “regulation being activated and deactivated, and wherein upon an alteration of a desired value of said high voltage, a deactivation of regulation of said target stream is effected until a new desired value of said high voltage is achieved”, have not been given patentable weight because they are directed to the operation of the apparatus and do not structurally distinguish the apparatus over the prior art.

23. Regarding claim 59, an element that is capable of altering parameters is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense.

24. Regarding claims 61, 62, and 79, Oettinger et al. further discloses wherein upon a deflection or blocking of an emission stream of said x-ray tube, striking of said emission stream

upon said target is essentially prevented, and regulation of said target stream is deactivated (fig. 3a, #138, and fig. 3b, #232 when entire apparatus is off).

25. Regarding claim 71, Oettinger et al. would necessarily have wherein a target stream that momentarily flows during activation of regulation (fig. 3b, #232) of said target stream is used as a desired value of said target stream (fig. 3b, in #120).

26. Regarding claim 73, Oettinger et al. further discloses wherein said at least one parameter of said target stream is regulated in such a way that an exceeding of a prescribed or prescribeable maximum electrical output of said target is prevented (fig. 3b).

27. Regarding claim 74, Oettinger et al. further discloses wherein upon an activation of said microfocus x-ray apparatus regulation of said target stream is activated in a chronologically delayed manner (fig. 3b, #232 to 120).

28. Regarding claim 75, Oettinger et al. further discloses wherein regulation of said target stream is activated (fig. 3b, #232) when an emission stream of said x-ray tube has achieved a prescribed or prescribeable desired value (fig. 3b, whatever the desired value may be).

29. Regarding claim 76, Oettinger et al. would necessarily have wherein upon alteration of a desired value of a high voltage of a high voltage generator, regulation of said target stream is

deactivated until a new desired value of said high voltage is achieved, prior to activation with enable signals (fig. 3a, #138 and fig. 3b, #232, when the device is off).

30. Regarding claim 77, Oettinger et al. further discloses wherein regulating parameters of regulation of said target stream are altered (fig. 3b, #204) as a function of high voltage of a high voltage generator (fig. 3b, #102).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oettinger et al. as applied to claims 44 and 48 above, and further in view of Fedra (US Patent Application Publication 2004/0247080).

Oettinger et al. discloses an apparatus as recited above. Oettinger et al. further discloses wherein said regulating device is provided with an electronic control circuit (paragraph 9).

However, Oettinger et al. does not disclose a microcontroller or regulation software.

Fedra teaches a microcontroller or regulation software (fig. 3, #102, and paragraph 40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Oettinger et al. with the microcontroller or

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regulation software of Fedra, since one would be motivated to make such a modification for better control and performance (paragraph 64) as implied from Fedra.

32. Claims 63 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oettinger et al. as applied to claims 51 and 69 above, and further in view of MacLachlan et al. (US Patent 3683191).

Oettinger et al. discloses an apparatus and method as recited above.

However, Oettinger et al. does not disclose determining whether a short circuit is present, and upon determination of a short circuit, deactivating a target stream.

MacLachlan et al. teaches determining whether a short circuit is present, and upon determination of a short circuit, deactivating a target stream (col. 3, lines 42-50).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus and method of Oettinger et al. with the determining of MacLachlan et al., since one would be motivated to make such a modification for more safety (col. 1, lines 62-67) as implied from MacLachlan et al.

Allowable Subject Matter

33. Claims 60 and 78 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and all intervening claims. The following is a statement of reasons for the indication of allowable subject matter.

34. Regarding claims 60 and 78, prior art does not disclose or fairly suggest an apparatus or method wherein upon a reduction of high voltage, regulating parameters are altered in such a way that a lag time of regulation of a target stream is increased, and wherein upon an increase of said high voltage, said regulating parameters are altered in such a way that the lag time of the regulation of said target stream is reduced, in combination with all the limitations in each respective claim, intervening claim, and base claim.

Conclusion

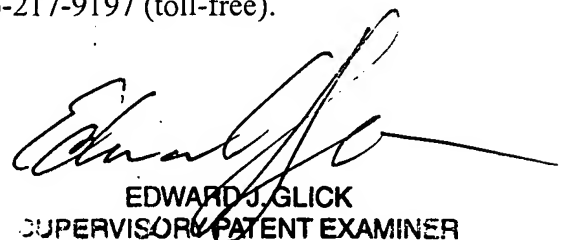
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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